SOIL CONSERVATION SERVICE

ENGINEERING STANDARD

# SURFACE DRAINAGE -FIELD DITCH

## Definition

A graded ditch for collecting excess water in a field.

## Scope

This standard applies to drainage ditches installed to collect water from a field. It does not apply to surface drainage, main or lateral (608) or to grassed waterways or outlets (412).

## Purpose

To drain surface depressions; collect or intercept excess surface water, such as sheet flow, from natural and graded land surfaces pr channel flow from furrows and carry it to an outlet; and collect or intercept excess subsurface water and carry it to an outlet.

## Conditions Where Practice Applies

Applicable sites are flat or nearly flat and:

1. Have soils that are slowly permeable (low permeability) or that are shallow over barriers, such as rock or clay, which hold or prevent ready percolation of water to a deep stratum.
2. Have surface depressions or barriers that trap rainfall.
3. Have insufficient land slope for ready movement of runoff across the surface.
4. Receive excess runoff or seepage from uplands
5. Require the removal of excess irrigation water
6. Require control of the water table.
7. Have adequate outlets available for disposal of drainage water by gravity flow or pumping.

## Design Criteria

Drainage field ditches shall be planned as integral parts of a drainage system for the field served and shall collect and intercept water and carry it to an outlet with continuity and without ponding.

## Investigations

An adequate investigation shall be made of all sites

## Location

Ditches shall be established, insofar as topography and property boundaries permit, in straight or nearly straight courses. Random a1ignment may be used to follow depressions and isolated wet areas of irregular or undulating topography. Excessive cuts and the creation of small irregular fields shall be avoided.

On extensive areas of uniform topography, collection or interception ditches shall be installed as required for effective drainage.

## Design

The size, depth, side slopes, and cross section area shall:

1. Be adequate to provide the required drainage for the site.
2. Permit free entry of water from adjacent land surfaces without causing excessive erosion.
3. Provide effective disposal or reuse of excess irrigation water (if applicable).
4. Conduct flow without causing excessive erosion.
5. Provide stable side slopes based on soil characteristics.
6. Permit crossing by farm equipment if feasible at selected locations.
7. Permit construction and maintenance with available equipment.
8. The minimum depth for a drainage field ditch shall be 12 inches. The steepest side slope shall be 8:1 where farming operations cross the ditch.

## Plans and Specifications

Plans and specifications for constructing drainage field shall be in keeping with this standard and shall describe the requirements for properly installing the practice to achieve its intended purpose.

## Excavation

The ditch shall be cut to the line and grade shown on the plans or as staked in the field.

### Spoil Placement

Spoil shall be spread and leveled so that the surface water can flow into the ditch. If the spoil is to be farmed, it shall be spread so that farming operations will not be hindered.

## Grading

The ditch will be cut to the line and grades shown on the plans. Reverse grades will not be permitted.

### Erosion and Pollution Control

Construction operations will be carried out in such a manner so erosion and air and water pollution will be minimized. State and local laws concerning pollution abatement shall be followed.

## Seeding

Sodding, seeding, fertilizing and mulching shall conform to the recommendations for permanent seeding in the Pennsylvania Technical Guide which is available in SCS offices or in the current Pennsylvania Agronomy Guide published by Pennsylvania State University.

## Maintenance

Provisions shall be made for maintaining the ditches and their outlets to permit effective drainage.